Ann. Natal Mus. Vol. 26(1) Pages 105–140 Pietermaritzburg December, 1984

Early Iron Age sites in the Muden area of Natal

by

Tim Maggs and **Val Ward**
(Natal Museum, Pietermaritzburg)

ABSTRACT

Small-scale excavations are described from two sites. Faunal and floral analyses give us further information on the economy of the period. Iron smelting, the ceramic sequence and other aspects of material culture are discussed. The first Early Iron Age burials, though very incomplete are described and the skeletal remains are analysed in an appendix by H. de Villiers. Conclusions are drawn concerning the choice of site locations and the reoccupation of sites.

INTRODUCTION

The Msuluzi Confluence site on the Tugela (Maggs 1980) was the first of its kind to be excavated and dated. The site provided the first adequate sample of pottery for what we now regard as the second phase of the Early Iron Age (EIA) in Natal (previously known as NC3 following Schofield's descriptions). However the economic information from this site was disappointing as little bone and no remains of cultivated plants were recovered.

Our attention was drawn to two sites in the Muden area where erosion was exposing the buried contents of several pits. Bone, including human skeletal remains, and patches of ash were noted in addition to inorganic cultural remains. The pottery closely resembled the Msuluzi sample and therefore there seemed to be the potential for supplementing the economic information available from that period. In addition, the erosion pointed to the desirability for some rescue work before more material was lost.

The two sites, Magogo (Grandmother) and Mhlopeni (Fig. 1) were investigated in September 1979 with a small team from the Natal Museum and a number of volunteers. Some survey work on neighbouring archaeological sites and ethno-archaeological research on contemporary homesteads was also carried out.

MAGOGO

Situated between the hill of this name and the Mpofana (Mooi) River, the Magogo site is very characteristic of contemporary sites in the Tugela Basin (Maggs in press). It is on a sloping pediment of deep Sunvalley–Ferry–Weenen soil which has been cut to a depth of several metres by recent erosion gullies which have spread laterally and removed much of the original surface particularly in the eastern portion of the site. It extends close to the Mpofana, virtually to the floodplain which is marked by more sandy soil. The site consists of concentrations of surface material with gaps in between (Fig. 2), sometimes with thinly scattered material. The overall limits seemed fairly easy to establish as beyond the outer concentrations the scatter falls off quite sharply. The total extent of the original settlement was about 7,6 hectares which is typical for sites of this period.

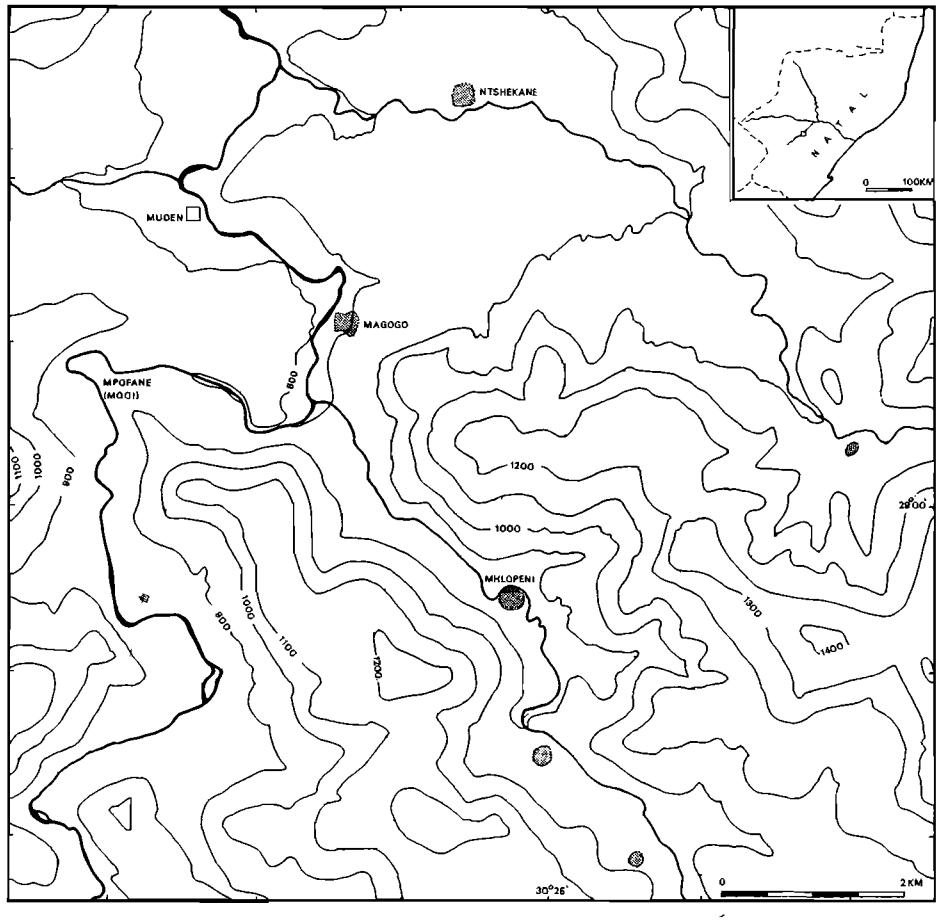


Fig. 1. Early Iron Age sites in the Muden area.

Within the site the majority of work took place in an area towards the centre where several pits and a rich scatter of smelting debris was exposed over a distance of some 20 metres. This area was gridded before excavation while a number of other isolated features, mostly pits, were excavated individually.

Features within the grid

The grid covered the largest and richest concentration of material seen, although this may not be a true reflection of its relative significance within the site. This is because the concentration was at an early stage of exposure by erosion (Fig. 3) and therefore at its most visible stage. Thus a number of pits were partly exposed (Nos 1, 2, 4 & 5) while two others (Nos 3 & 6) were covered by partly exposed cultural deposits—the slag and ash heaps. As discussed below, it is clear that there was more than one EIA occupation of the site and within the grid Pit 6 and perhaps Pit 4 have pottery of a later style than the other features.

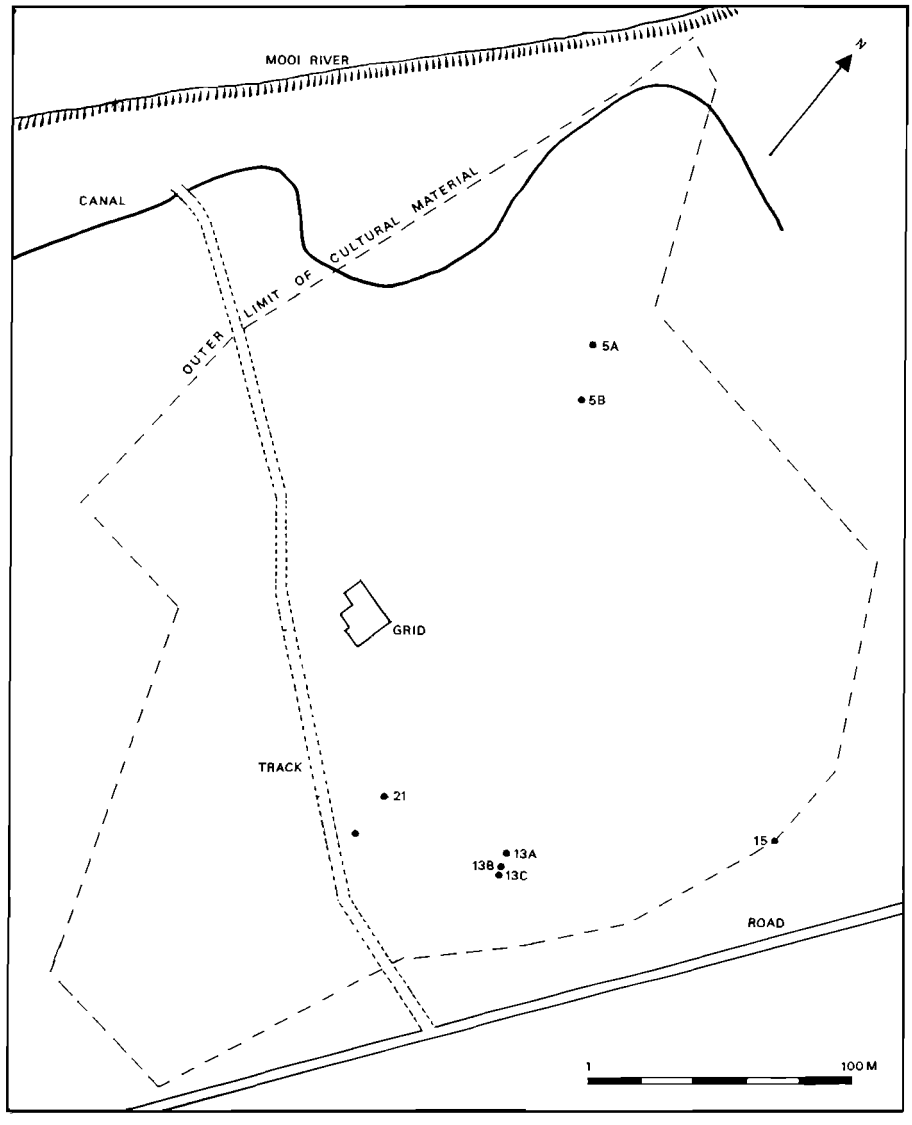


Fig. 2. Plan of the Magogo site.

Apart from the gridded area there was only one other concentration of smelting debris, this being a smaller heap at Feature 5B (Fig. 2) which was not excavated.

Within the grid the extent of the main slag heap can be seen in Fig. 3, although there was a very extensive scatter in all directions beyond this. The slag, tuyere and furnace fragments were removed square by square but despite the frequent burnt lumps of furnace wall, often with finger impressions in them, no actual furnace was found. In square E9, however, an elongated patch on the edge of the recent erosion proved to be a pit full of burnt red soil, slag, ash, charcoal and

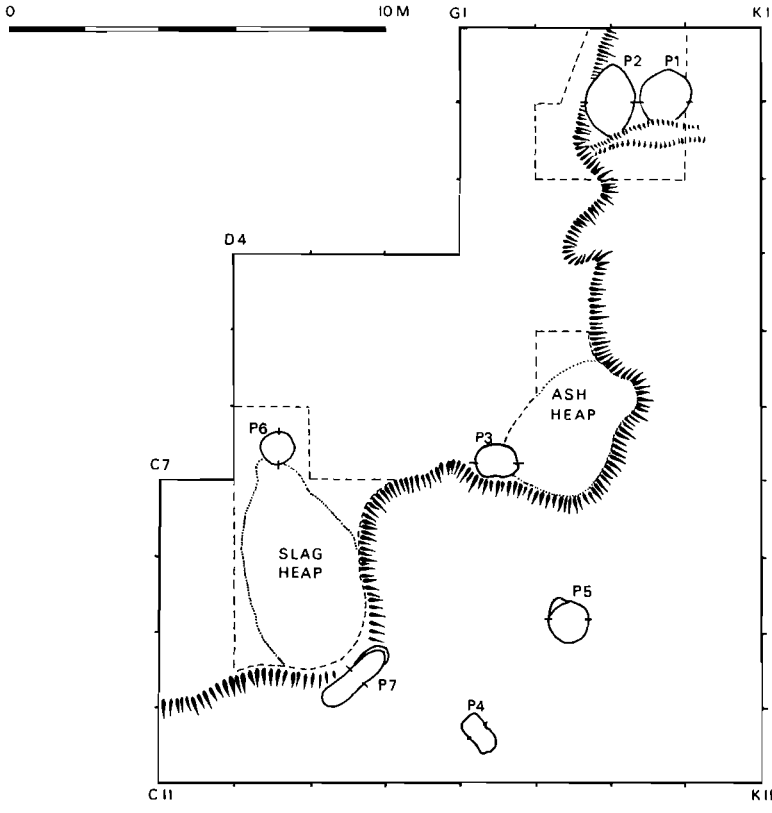


Fig. 3. Plan of the grid area, Magogo.

haphazardly placed furnace fragments. This Pit 7 proved to be 2 metres long, 55 cm wide and deepest at 60 cm towards its middle (Fig. 4). The shape and contents are quite unlike any other pit seen on this or related sites and therefore it is of considerable interest. In view of the dearth of EIA furnaces described from south of the Lake Victoria region of central Africa, it has been suggested (Maggs 1980) that at this time furnaces may have been effectively demolished after each smelt. It is possible that this trench-like pit formed the bowl of a furnace whose upper portions were demolished and, along with other debris, dumped into the pit after the last firing. Certainly there is enough smelting debris in the concentration to show that quite a few smelts took place in the immediate vicinity. Pit 7 is the only feature that could be directly associated with smelting. A mass of furnace wall fragments from Pit 1, which is discussed below, provides a possible alternative furnace model.

Another feature thought to be associated with the iron smelting is Pit 3. This was partly covered by the ash heap (Fig. 3) which was removed to reveal a pit. Most of the top of the pit was sealed by a layer of soil, 15–20 cm thick which had been baked by fire into lumps harder and redder than the surrounding red-brown soil. Immediately below and partly mixed with this burnt layer was very fresh-

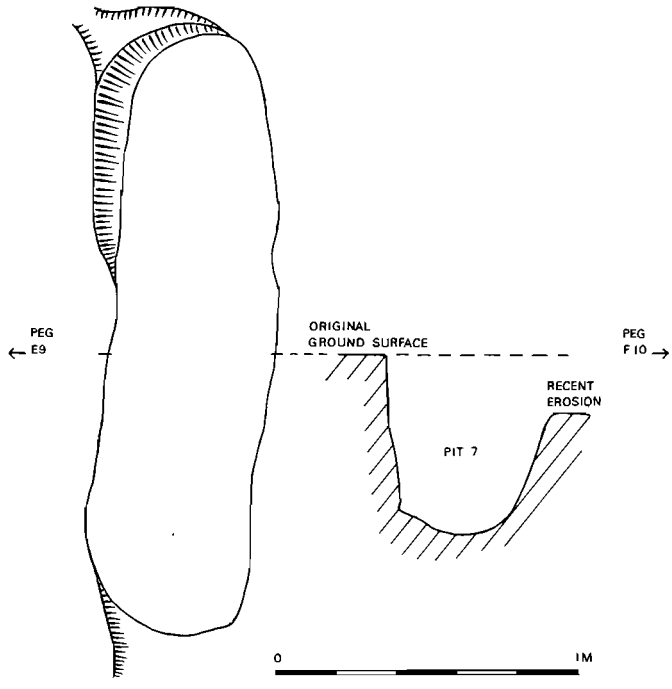


Fig. 4. Plan and profile of Pit 7.

looking ash containing much charcoal in contrast with the darker grey, more earthy material of the ash heap which contained less charcoal. The ash and charcoal proved to be the main constituent of the pit fill, extending down to the base. Over the north-eastern two thirds the material was particularly fresh-looking. It included pieces of charcoal which, though friable, showed the original pieces of stick up to 10 cm long *in situ* as well as patches where the charcoal graded into ash as if it had been burnt *in situ*. Sharply contrasting lenses of black, grey and white burnt material (Fig. 5) confirm that combustion took place *in situ* unlike the case with the other pits where ash had clearly been dumped from fires burnt elsewhere. The contents did include some bone, beads and small sherds, but in general much less cultural material than any of the other pits. Pit 3, which is also smaller than most of the others, clearly served a different purpose. The amount of ash and charcoal sealed by a layer of soil argues that it was used for the production of charcoal, presumably for smelting.

The ash heap by contrast consisted of typical midden material with a fair amount of pottery and other cultural remains. A scatter of slag seemed largely confined to the surface and consisted of fairly small pieces which probably washed down from the slag heap. The 15 cm maximum depth of the heap may be only a portion of its original size for it had been reduced by erosion.

The slag heap contained not only slag, tuyere and furnace fragments but also numerous small pieces of heat-altered ore, some adhering to slag. The ore is

Fig. 5. Pit 7 partly excavated, showing discrete lenses of black, grey and white material from *in situ* burning.

sedimentary and apparently sometimes in close association with sandstone. Close examination of the slag revealed several pieces in which broken chips of bone, much altered by heat and subsequent weathering, were present. This suggests that bone was at least on some occasions used as a flux. However chemical analyses of EIA smelting material from Natal have yet to be undertaken. Pieces of dolerite showing both heat spalling and conchoidal fracture show that rocks of this type were brought up from the Mpofana River for use, no doubt as anvils and hammers, in the iron-working industry. The tuyeres are discussed under finds below.

The other pits

Pit fillings consisted of ashy soil sometimes with lenses of the red-brown soil. Pit 1 (Fig. 6) in particular showed a complex stratigraphy with dumping of different types of material from different sides. The furnace fragments were clearly dumped in one episode which has encouraged us to attempt reconstruction of the furnace shape as discussed below. Pit 1 also contained a variety of other material which is fairly typical of the other pits, although more varied than some. Items include slag and tuyeres, much pottery, a ceramic figurine, hornfels flakes, bone, charcoal and carbonised seeds. A charcoal sample from about half-way down gave the following result: Pta–2874, 1360±50 (A.D. 590), very much as expected.

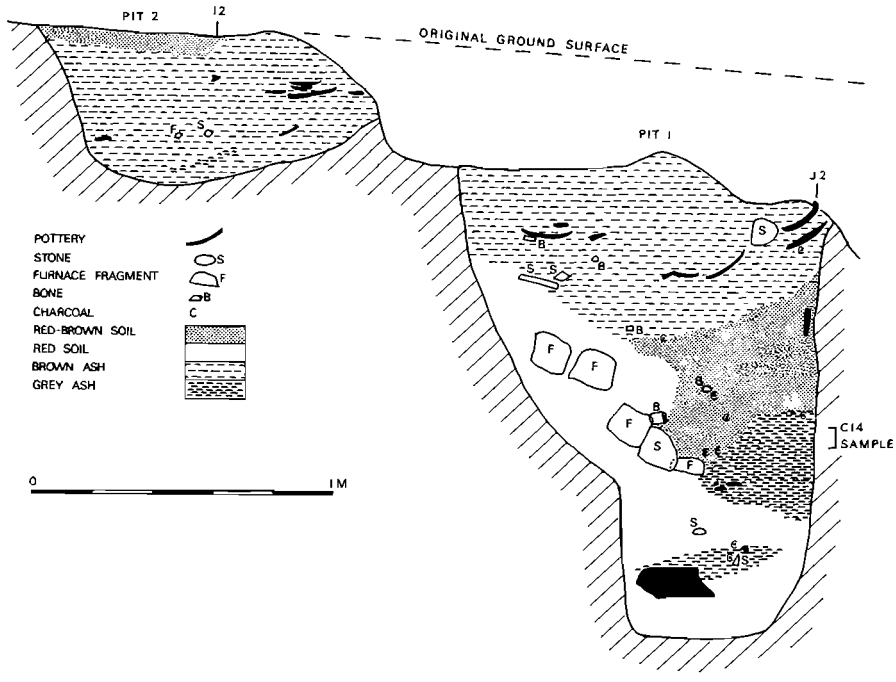


Fig. 6. Section of Pits 1 & 2.

Pit 2, unlike the others, is a broad, shallow hollow, over 2 m across in an east–west direction, but only 0,5 m deep at its maximum. It may have been dug initially for a different purpose, perhaps to obtain earth for building, but its contents were similar to the others. A recent erosion gully had disturbed parts of Pits 1 and 2, mixing the material. Pit 21 though largely eroded was probably a similar hollow about 1,2 m wide and 35 cm deep.

Pits 1, 4, 5, 6, 13B and 15 were much the same size, about a metre wide and from 1,1 to 1,9 m deep (Figs 7 & 8) though the original depth of several had to be estimated because of the erosion. Pit 5A, the exception (Fig. 8) is shallow and may have been dug in two episodes, the deeper part being subsequent.

At the neighbouring site of Ntshekane (Maggs & Michael 1976) parts of some pit fills were clearly single episodes when a mass of cultural debris was dumped, sometimes above fine ashy lenses which had apparently accumulated over a longer period. This phenomenon was characteristic of Pits 4 and 13B, being particularly well demonstrated at the latter. Its upper portion, exposed by erosion consisted of a pile of stones among which were the remains of most of a pot and a broken ceramic figurine horn as well as broken upper and lower grindstones, other manuports and daga blocks. Below this was a series of soil and ash lenses with much less cultural material though there were some interesting finds including a considerable number of immature caprine cranial bones and a little cluster of four *Aspatharia wahlbergi* (freshwater mussel) shells carefully fitted into one another beside two drilled teeth (a leopard and a bushpig) (Figs 10 & 11). This cluster is

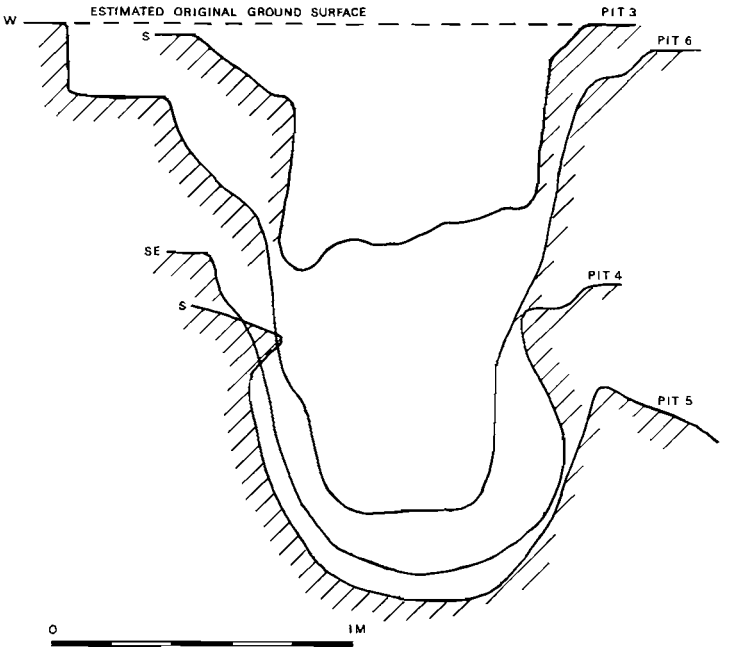


Fig. 7. Profiles of Pits 3–6, all positioned according to actual or estimated original ground surface to show comparable depths.

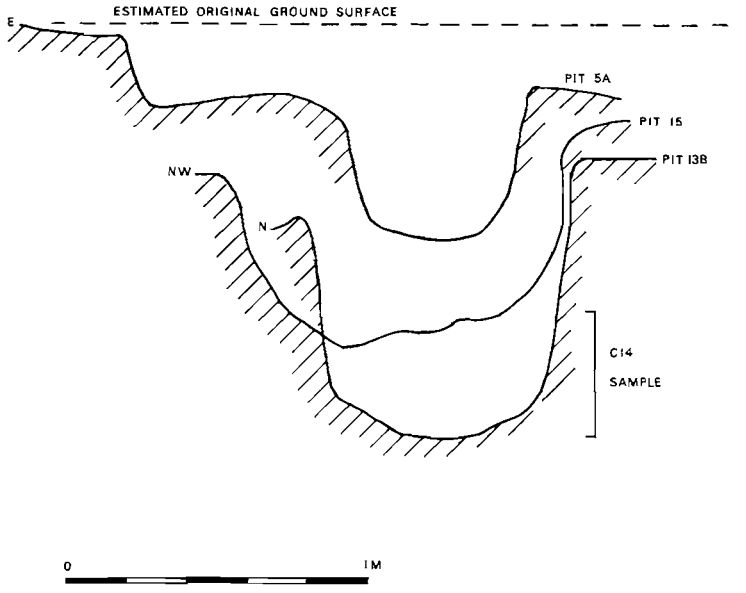


Fig. 8. Profiles of Pits 5A, 13B & 15.

Fig. 9. Exposed fill of Pit 13B after initial cleaning. Mass of stones, including grindstones, and pottery represent a single dumping episode.

suggestive of some sort of ritual offering. Just below this there was a series of interdigitating lenses of ashy material and silty clay suggesting that this part of the fill was accumulating during rainy (summer) conditions. The lowest 30 cm contained only a few small sherds within the ashy soil. The stratigraphy would suggest a relatively slow accumulation of sweepings and domestic hearth debris in the lower portions, culminating in a single dumping of the coarse upper material, perhaps at the abandonment of a hut or of the settlement itself. Charcoal from the lower 40 cm gave the following date: Pta–2875, 1190±50 (A.D. 760). The date is confirmed by the pottery which is of Ndondondwane rather than Msuluzi type and therefore about 150 years younger than Pit 1.

Pit 6 pottery also resembles Ndondondwane and it was therefore probably part of the same occupation at Pit 13B. Although material from the slag heap appeared to cover it, the stratigraphic relationship was not clear. There was a fair amount of smelting debris in the upper 20 cm but this could well be from subsequent movement. Pottery from the slag heap is of Msuluzi type and therefore this feature is almost certainly contemporary with Pit 1 (Table 1, Group 1).

Pits 4, 5A and 15 show a mixture of Msuluzi and Ndondondwane characteristics making their chronological position unclear. They could be intermediate in time, or alternatively their relatively small ceramic samples could merely be rather skewed samples of either one of the two periods (Table 1, Group 2).

TABLE 1

Attributes of the pots from Magogo and Mhlopeni compared with Msuluzi and Ndondondwane.

Attributes Nos 2 & 44 relate to neck profile, 8, 9, 32, 11 & 12 relate to position of decoration, 39 is cord effect. For description of attributes see Maggs 1984.

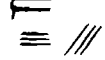
Attributes	Features	*Magogo*												*Mhlopeni*	*Msuluzi*	*Ndondondwane*
		Group 1							Group 2			Group 3				
		1	2	5	13A	21	AH	SH	4	5A	15	6	13B			
2		74	100	100	100	100	100	100	100	100	69	55	60	94	100	67
44		26	—	—	—	—	—	—	—	—	31	44	40	6	—	29
8		78	50	63	33	67	80	50	6	—	62	11	40	38	80	19
9		4	—	—	67	—	20	20	—	—	8	—	—	31	2	2
32		13	17	25	—	33	—	—	94	100	31	88	60	25	7	79
11		35	80	25	33	33	20	—	25	—	38	22	20	31	18	2
12		9	—	—	—	—	—	—	13	33	—	—	—	—	4	—
14		26	40	38	—	—	60	50	—	—	23	11	20	31	4	10
15		35	17	13	33	—	20	—	19	—	23	11	—	13	9	26
34		26	—	13	33	67	—	50	44	67	46	22	60	19	22	45
35		13	—	13	33	—	60	50	—	—	8	11	—	13	38	—
17		4	—	—	—	—	—	—	—	—	—	11	—	19	4	2
23		22	17	13	—	33	—	—	6	—	8	—	20	6	20	—
36		4	—	—	33	—	—	—	6	—	—	—	—	—	11	—
24		—	—	—	—	—	—	—	—	33	—	11	—	—	—	10
21		—	17	—	—	—	—	—	—	—	—	—	—	—	2	—
19		17	—	25	33	—	40	—	—	—	8	—	—	6	9	2
20		48	20	13	—	—	60	—	6	—	38	11	—	25	—	—
37		35	—	—	—	66	—	—	19	33	31	—	—	31	24	12
38		17	33	—	—	—	—	—	13	33	8	33	20	—	16	7
39		9	17	13	—	66	—	—	31	—	46	33	—	—	2	7
25		4	—	13	—	—	—	—	—	—	—	—	—	—	6	—
40		9	50	—	—	33	—	—	25	—	8	22	20	—	9	2
29		—	—	—	—	—	—	—	6	—	—	—	—	—	2	—
48	Burnish	4	—	—	—	—	—	—	6	—	—	33	—	—	2	7
		23	5	8	3	3	5	2	16	3	13	9	5	16	45	42

Fig. 10. Lower portion of Pit 13B showing carefully placed group of four fitting mussel shells and two drilled canine teeth.

Fig. 11. Drilled teeth (from top) bushpig and leopard from Pit 13B, black-backed jackal from gully near Pit 1.

THE FINDS

Pottery

Most of the features yielded pottery of Msuluzi type, while the pottery from Pits 6 and 13B was more like that from Ndondondwane (Maggs 1984). Pits 4, 5A and 15 vessels had characteristics common to both Msuluzi and Ndondondwane (Table 1, Groups 1, 3 & 2 respectively).

The pottery illustrations have been chosen to show new features rather than the range of typical pottery, as both Msuluzi and Ndondondwane pottery has been described elsewhere (Maggs 1980, 1984).

The Msuluzi-type pottery characteristics which are particularly common at Magogo include body decoration, especially the pendant hatched triangles which at Magogo are very much elongated and have a distinctive style of hatching (Fig. 12:1). There is also a high incidence of pendant hatched quadrilaterals and cord effect at the lower neck. An Msuluzi bowl (Fig. 12:3) was found in Pit 13C while Pit 1 yielded fragments of two such vessels. While relatively rare, these distinctive bowls are a regular feature of this period. There were only two undecorated pots, but besides the Msuluzi bowls (Fig. 12), only one other bowl was decorated.

Missing from the pots of this sample, but found at Msuluzi, are applied decoration, short rows of individual impressions, curvilinear designs and a plain band between bands of decoration on the neck.

The Ndondondwane-type pottery from Pits 6 and 13B (Fig. 15) is characterised by a higher incidence of necks which are more upright than curved everted. Although this sample of 14 vessels is smaller than at Ndondondwane (42 vessels), burnish is more common, as is cord effect and bands of opposed hatching with an intervening groove. Less marked at Magogo is hatching and cross-hatched decorative bands.

Pits 4, 5A and 15 have pottery (Fig. 14) which seems to combine the elements of the Msuluzi and Ndondondwane types of pottery. The decoration is almost confined to the lower neck in Pits 4 and 5A, there is only one vessel with pendant triangles out of 19 vessels. The necks, however, are all curved everted which is more specifically an Msuluzi attribute (Table 1, Group 2).

As at other EIA sites Magogo yielded a number of 'bottomless pots'. Six of the most complete vessels had their bases purposely and neatly chopped off. The broken edge of one of these had been smoothed, showing that it had been used for a time after the base had been removed.

One pot from Pit 1 (Fig. 12:3) was unusual in that it is larger than the others, has a marked carination and the neck had been broken off at the body–neck junction and roughly ground down to form a new lip. This feature has been found at Ndondondwane as well.

Pit 6 yielded a vessel (Fig. 15:3) which suggests a transition towards Ntshekane (Maggs & Michael 1976). The fabric is thin and the decoration fine. It has a tall, upright neck, typical Ntshekane decoration and a red burnish. Most of the other vessels in this pit have attributes which are common to both Msuluzi and Ndondondwane.

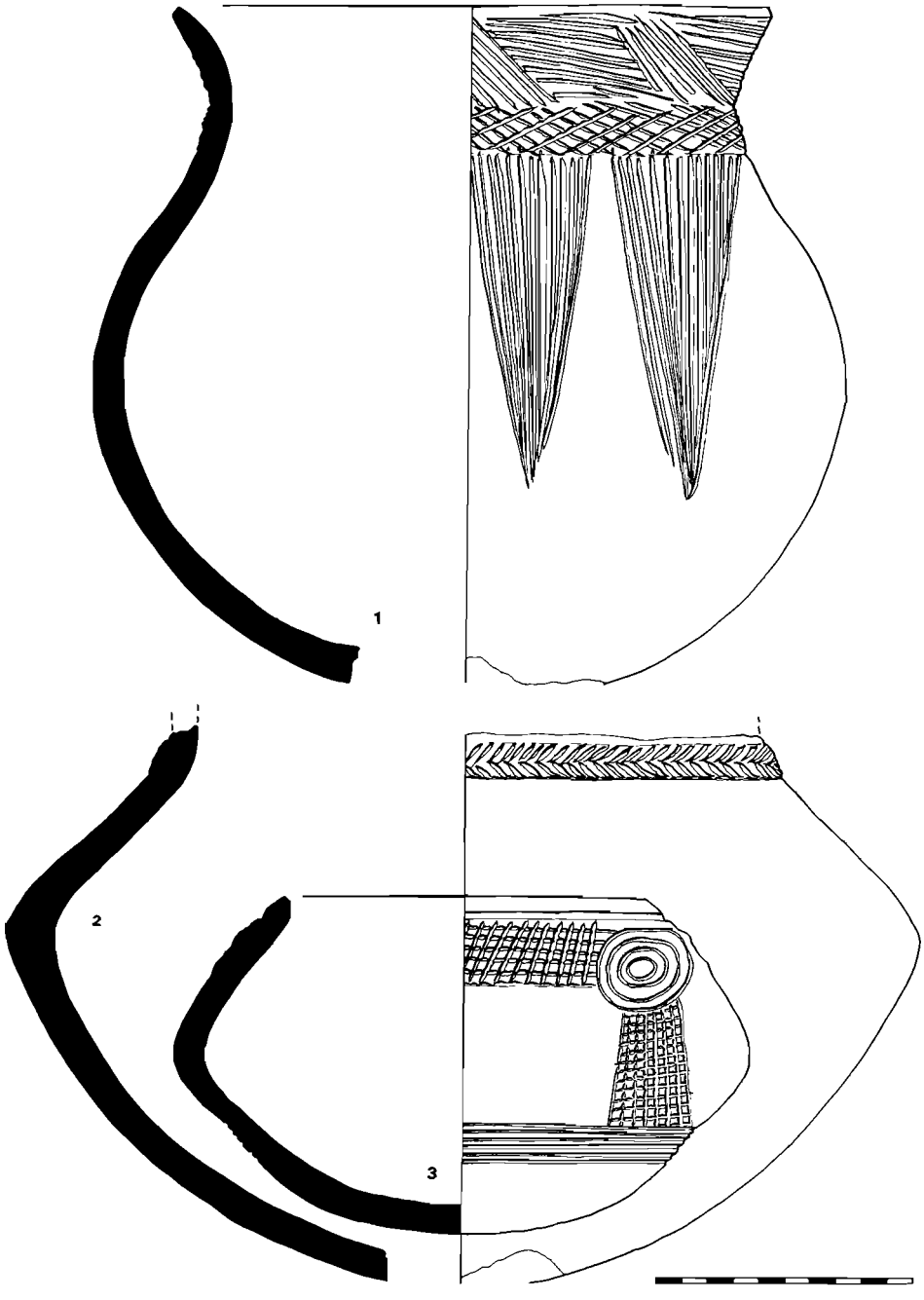


Fig. 12. Group 1 pottery. 1 from Pit 1 shows typical, local, elongated, pendant triangles, 2 from Pit 1 is the only carinated pot (neck broken off), 3 from Pit 13C is an Msuluzi bowl.

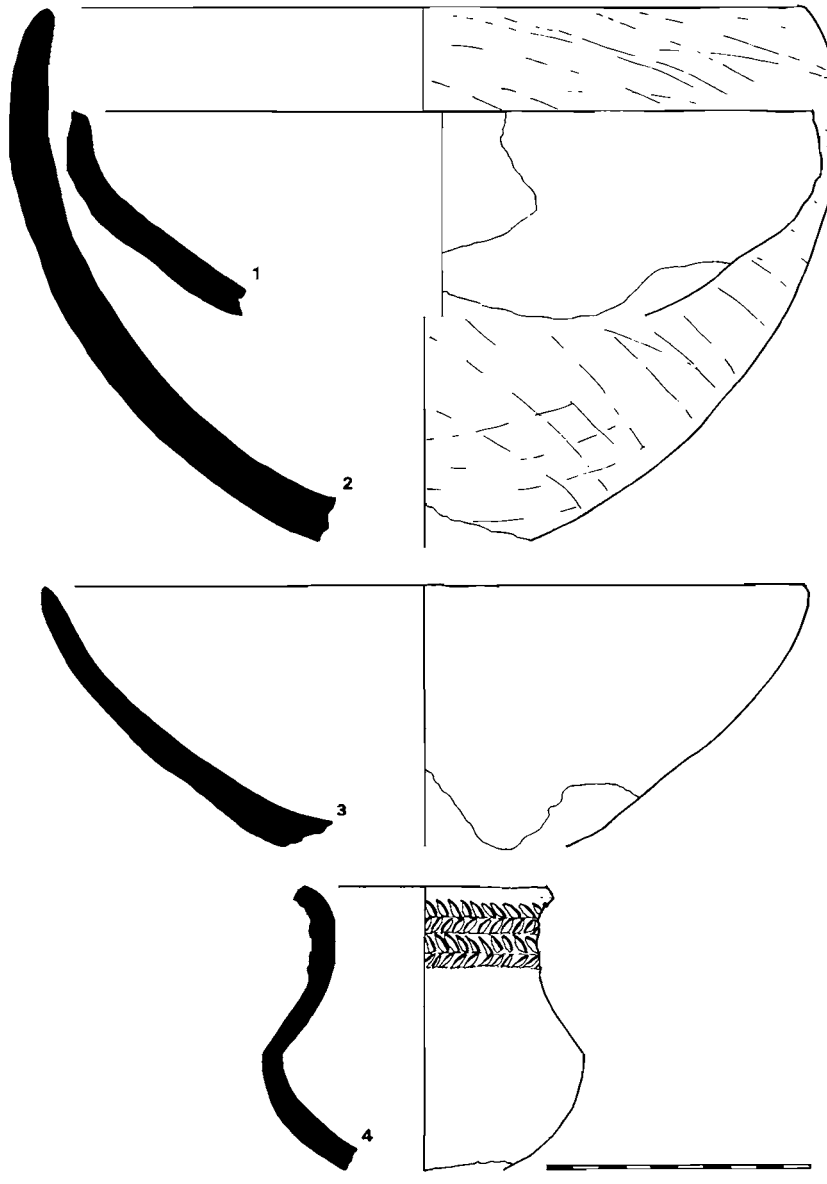


Fig. 13. Group 1 pottery. 1 from Slag Heap, 2 from Pit 21, 3 and 4 from Pit 1. 4 is an unusual, small, subcarinated pot with upright neck.

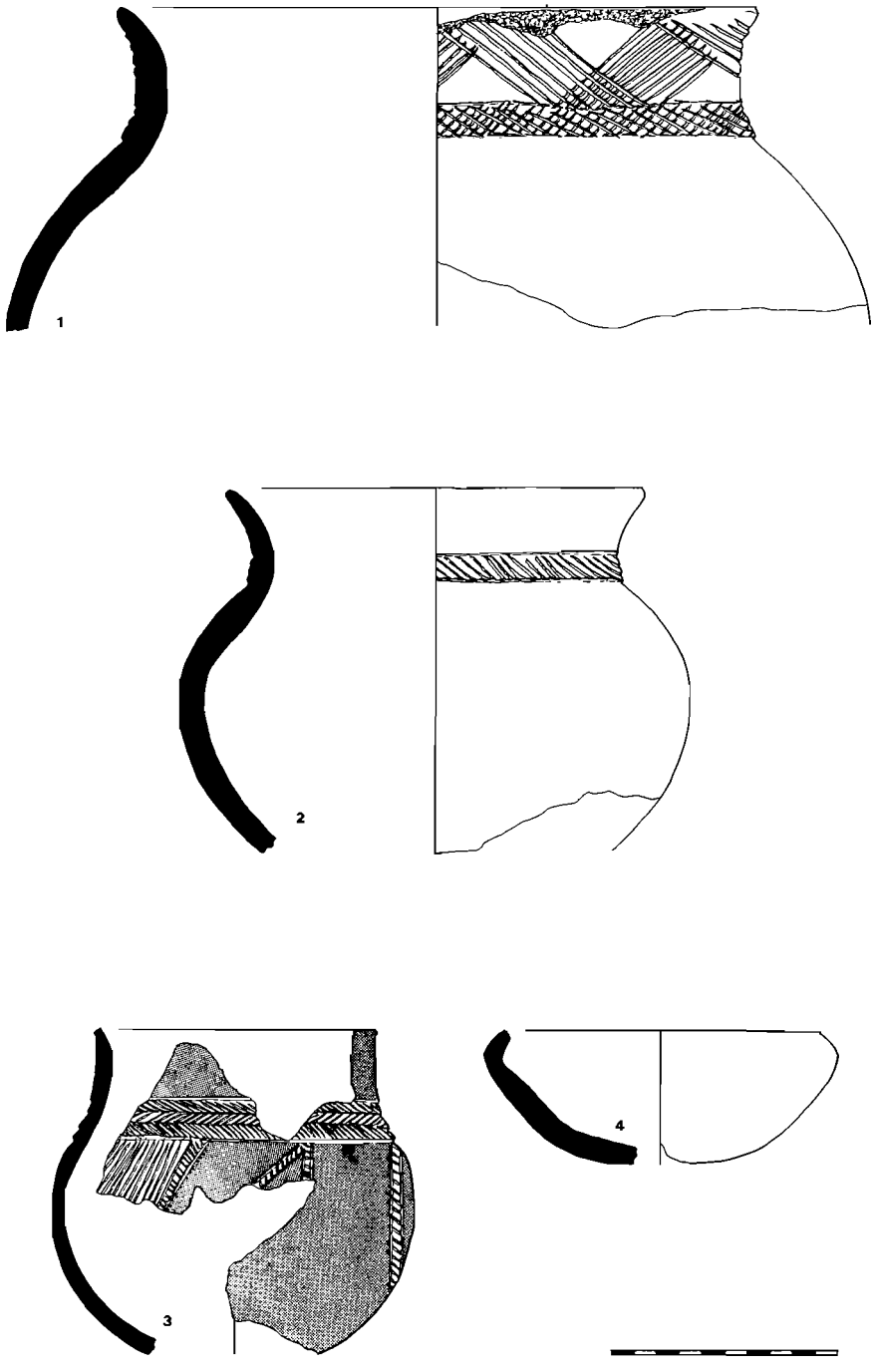


Fig. 14. Group 2 pottery. 1 from Pit 5A, 2 from Pit 15, 3 and 4 (with red burnish) from Pit 4.

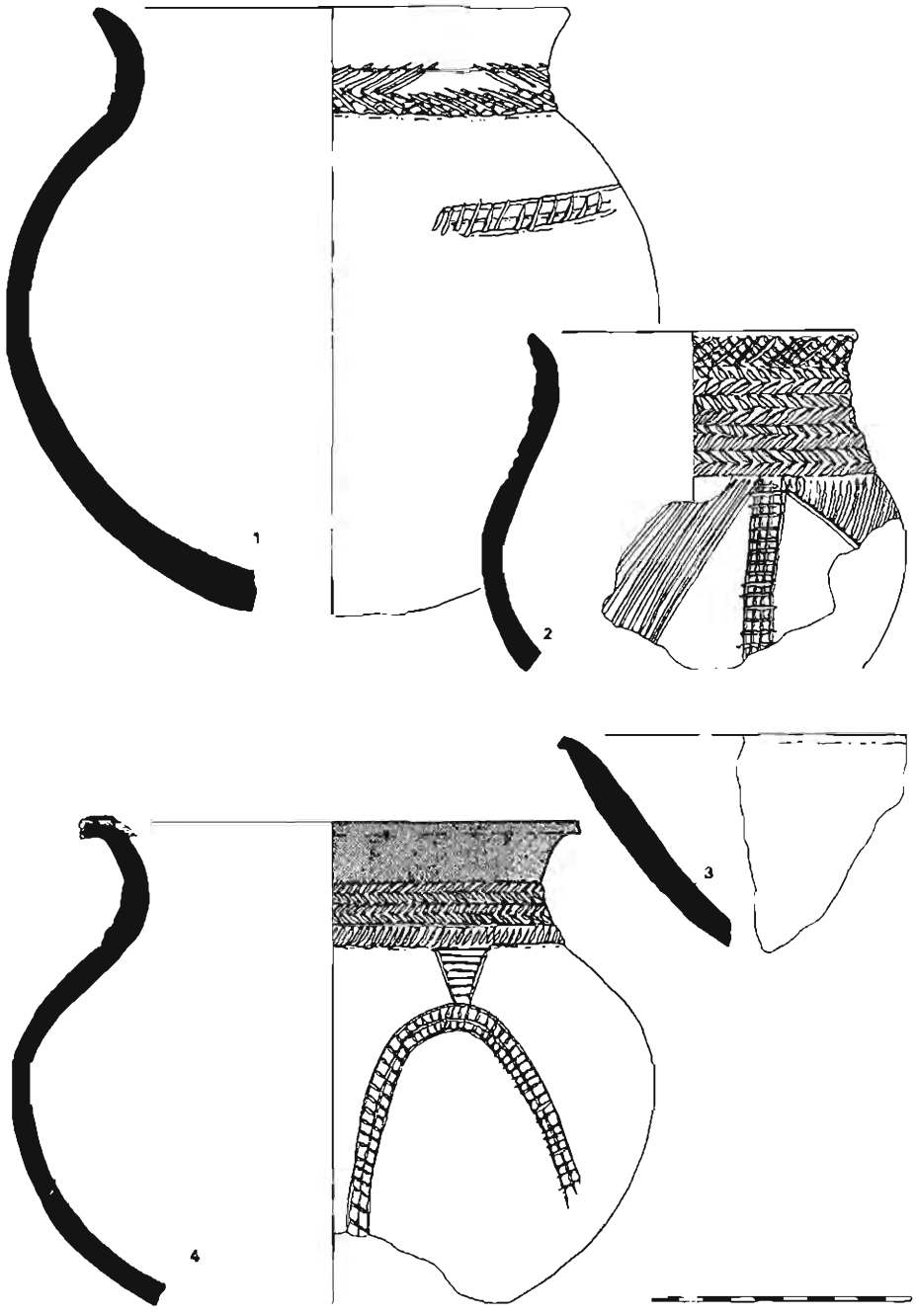


Fig. 15. Group 3 pottery. 1 and 2 from Pit 13B. 3 (with red burnish) and 4 from Pit 6.

Characteristics of the bowls (Attribute numbers as in Maggs 1980)

Shape

2. Subcarinated, not thickened
11. Subcarinated just below lip
12. 'Msuluzi' bowl
3. Hemispherical
4. Subspherical
20. Widemouthed
5. Lip profile rounded
6. Lip profile flattened
8. Groove or flute on lip
18. Lip emphasis

Decoration

15. Bands of grooves, hatching or cross-hatching
16. Panels of grooves, hatching or cross-hatching
17. Burnish

TABLE 2

Attributes of the bowls as percentages of the sample from each feature

Attributes	*Magogo*												*Mhlopeni*
	Group 1							Group 2			Group 3		
Features:	1	2	5	13C	21	AH	SH	4	5A	15	6	13B	
2	26	—	—	—	—	100	33	—	—	—	—	—	—
11	4	—	—	—	—	—	—	—	—	—	20	—	20
12	9	—	—	100	—	—	—	—	—	—	—	—	40
3	39	50	100	—	100	—	33	38	66	100	80	50	20
4	9	—	—	—	—	—	33	8	34	—	—	50	20
20	13	50	—	—	—	—	—	54	—	—	—	—	—
5	43	50	100	100	66	—	34	62	100	100	100	50	100
6	48	50	—	—	34	100	66	38	—	—	—	50	—
8	2	—	—	—	—	—	—	—	—	—	—	—	—
18	—	—	—	—	—	—	—	15	—	—	—	—	—
14	—	—	—	—	—	—	—	—	—	—	—	50	—
15	4	—	—	100	—	—	—	—	—	—	—	—	20
16	4	—	—	100	—	—	—	—	—	—	—	—	—
17	9	—	—	—	—	—	—	15	34	—	—	—	40
Matt	91	100	100	100	100	100	100	85	66	100	100	100	60
Sample	23	2	1	1	3	1	3	13	3	1	5	2	5

Other ceramic items

Figs 16 & 17 show the fragments of ceramic sculpture found at Magogo. The three cylindrical body parts, found in different pits and which do not fit together, seem to represent (Fig. 16, left to right) an upper torso with arms, the middle portion of a torso with umbilical hernia and a lower torso with buttocks and stubby legs. All three are decorated with rows of impressed and incised lines probably representing cicatrisation while the third suggests female genitalia. Two

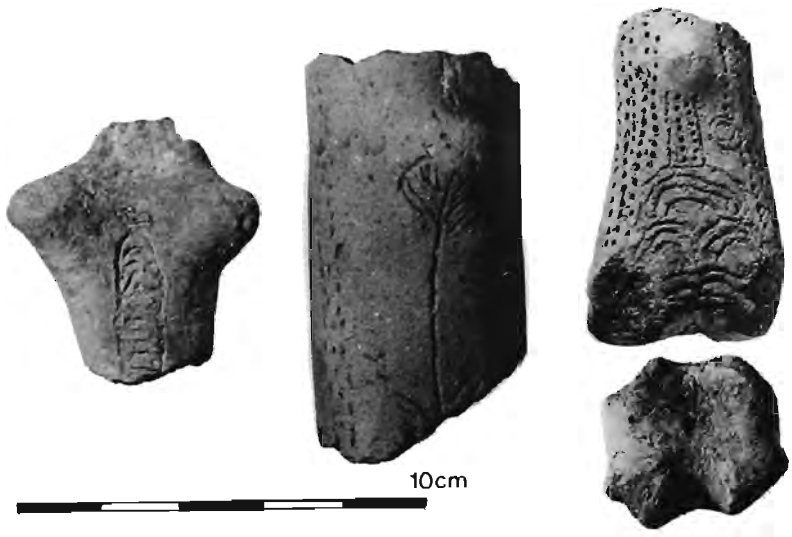


Fig. 16. Parts of 3 small, ceramic, human figurines, from left upper torso, mid-torso, lower torso with stumpy legs and genitalia (2 views).

Fig. 17. Ceramic animal horns.

animal horns hint at the presence of larger clay sculpture (Fig. 17). The bigger one, with a basal diameter of 7,5 cm, had clearly broken off a larger object which could have been similar in scale to the largest of the Ndondondwane sculptures. Five clay discs ranging in size from 2–4 cm in diameter made from sherds are of unknown function.

A large number of tuyere fragments were recovered, mainly from the slag heap. Of these 51 were of sufficient size to include in an analysis of diameter and fabric thickness. The results shown in Table 3 are fairly closely comparable with those from Msuluzi Confluence and are considerably different from those from the LIA site of Mabhija which confirms our view (Maggs 1982) that EIA and LIA tuyeres are significantly different in Natal.

Several fragments were recovered from the cool, bellows end of the tuyere. They show a splayed, funnel-shaped end. Four of these had been fired prior to use however, one from Pit 1 clearly had not as its fabric graded into unfired clay towards the end which had crumbled away.

From the furnace wall fragments recovered from Pit 1 an attempt was made to reconstruct the size and shape of the furnace but without much success. The fragments were often roughly rectangular and varied in size from about 9×9 cm to 20×20 cm with a thickness of around 10 cm. The 20 cm height of the largest pieces gives this as a minimum height of the furnace wall. However, the often smooth top and bottom edges of the fragments show that the wall was built up from several rings of damp clay each 10–20 cm in height, so the total height would have been considerably greater. By measuring the curvature on some of the larger pieces the radius of curvature was calculated at between 30 and 50 cm, however it is not known whether the furnaces were circular or some other shape in plan. Some pieces were vitrified but there was no evidence of tuyere holes. The interior of the furnace had been smoothed over with clay by hand as was evidenced by the finger marks left on the inside surface.

A few pieces of burnt daga, probably hut fragments, were excavated from Pit 2, the gully nearby and from Pit 13A. Some of these had vegetation impressions but so far these have not been identified.

TABLE 3

Tuyeres from Magogo compared with Msuluzi Confluence (EIA) and Mabhija (LIA).

	Inner diameter in mm				
	Smallest	Mean	Largest	Standard Deviation	n
Magogo	27	43	52	5	53
Msuluzi Confluence	26	47	60	9	23
Mabhija (LIA)	28	37	50	6	31
	Fabric thickness in mm				
	Smallest	Mean	Largest	Standard Deviation	n
Magogo	8	10	16	5	53
Msuluzi Confluence	9	14	19	3	23
Mabhija (LIA)	19	30	38	4	31

Worked shell

It has been argued previously (Maggs 1980) that the raw materials used for shell disc beads can be an indicator of environment. The two identified raw materials on EIA sites in Natal are *Metachatina kraussi*, a large land snail, and ostrich eggshell (O.E.S.). The two species are ecologically incompatible—the ostrich requiring open savanna or an essentially treeless environment whereas *Metachatina* requires forest or fairly thick bush as it is quickly killed by direct sunshine.

The two materials are readily distinguishable when fresh but well-worn or weathered examples may require microscopic examination. *Metachatina* has a distinctively sculptured external surface which resembles a woven texture (Fig. 18 top, left and centre). The internal surface is smooth but has a pattern which resembles ripples on water (Fig. 18 bottom row, especially right hand example). Its structure is markedly laminar which is evident especially in well-worn examples (Fig. 18, top right especially the top edge). By contrast, ostrich eggshell has a remarkably homogeneous structure and lacks lamination. The outer surface is smooth with the exception of the pores which may not be visible on worn specimens (Fig. 19, left). The inner surface, however, has a granular texture consisting of mammillary cones each of which is the inner portion of a calcite crystal (Fig. 19, right. Von Schirnding, Van der Merwe & Vogel 1982). This crystalline structure may also be visible in a broken section of eggshell. A total of 394 shell disc beads was recovered from all parts of the site, most being from the pits, eg. 127 from Pit 1. *Metachatina* was the preferred raw material with 367 beads; the remaining 27 being of ostrich eggshell. Numerous pieces of unworked *Metachatina* including juveniles show that this snail was present locally, while beads broken in the process of manufacture show that such beads were made on site. By contrast eggshell was not found and no uncompleted, broken beads, indicating that few if any were made locally. The O.E.S., beads representing only 7 % of the total, were therefore most likely introduced from more open country further inland.

Table 4 shows that the ostrich eggshell beads are slightly larger in diameter on average, as they are at Ndondondwane (Maggs 1984) and Msuluzi Confluence (Maggs 1980). A number of beads all measuring 7 mm in diameter was found together in a straight row in Pit 5A indicating that they were strung in a single row.

According to R. Kilburn, who commented on the shell finds, most if not all of the achatinid shell fragments appear to be naturally occurring in the deposits except for a piece of ground *Metachatina* from Pit 1 surface. Of the four

TABLE 4

Shell disc beads (diameters in mm).

	Smallest	Mean	Largest	Standard Deviation	n
Metachatina	4	7,01	13	1,27	367
Ostrich eggshell	6	7,74	12	1,65	27

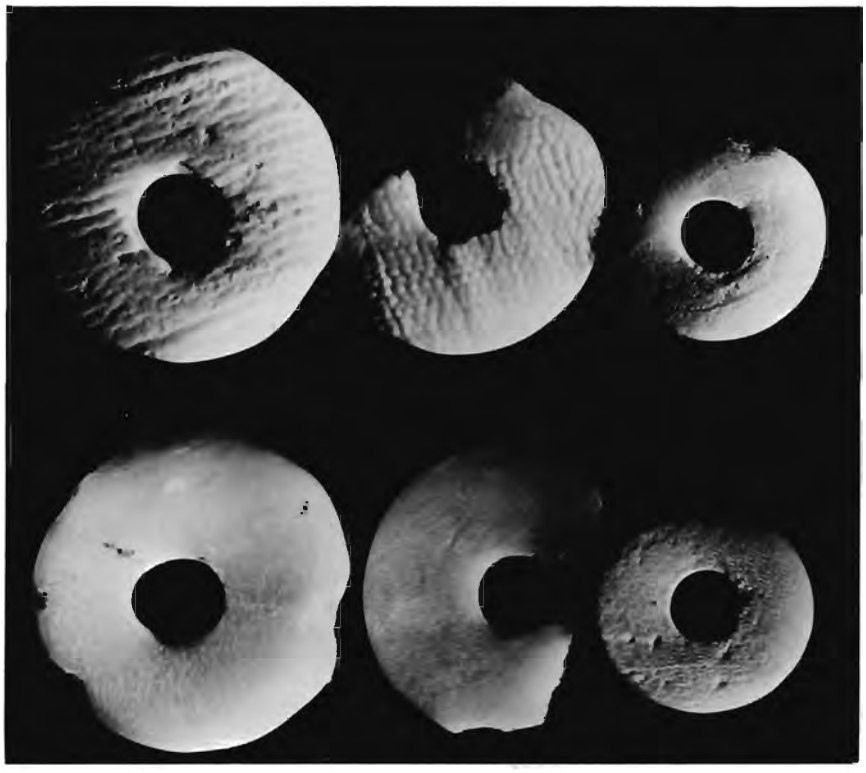


Fig. 18. Microphotographs showing structure of *Metachatina* beads. Top row left and centre shows external surface with 'woven' texture, right shows laminated structure. Bottom row shows ripple pattern of internal surface.

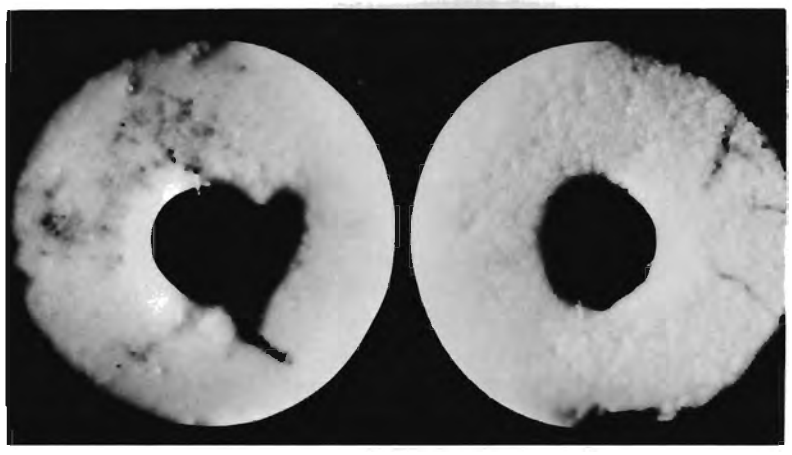


Fig. 19. Microphotographs showing structure of ostrich eggshell beads. Left shows smooth external surface with pores, right shows granular texture of internal surface.

Aspatharia wahlbergi shells buried together with the drilled teeth in Pit 13B two had their tips worn down from use. Nine other pieces of freshwater mussel were recovered from the pits. A marine shell *Monodonta australis* from Pit 5A had been drilled and showed signs of wear, while an estuarine shell *Nassarius kraussianus* came from the surface. Both were presumably ornaments and they indicate coastal contact as do similar finds from other EIA sites.

Worked bone

Amongst the worked bone recovered during excavation was a polished bone point 83 mm in length from Pit 1, a butt end of a polished point or link shaft which had been ringed and snapped from H6 and a broken point measuring 49 mm from the surface of H2. These were no different from the points recovered from contemporary EIA Natal sites.

Apart from the drilled *Panthera pardus* (leopard) and *Potamochoerus porcus* (bushpig) canines from Pit 13B a drilled tooth of *Canis mesomeles* (black-backed jackal) was recovered from the gully near Pit 1 (Fig. 11).

A fuller description of the worked bone is given by E. A. Voigt (1984).

Metal objects

Only 2 metal items were found. During excavation of Pit 2 a bead of rolled iron measuring 9 × 4 mm was recovered. The only other artefact was a surface find, from the side of a gulley close to Pit 21, which was a very corroded iron blade from a knife or spearhead, the only one yet recovered from an EIA context in Natal (Fig. 20).

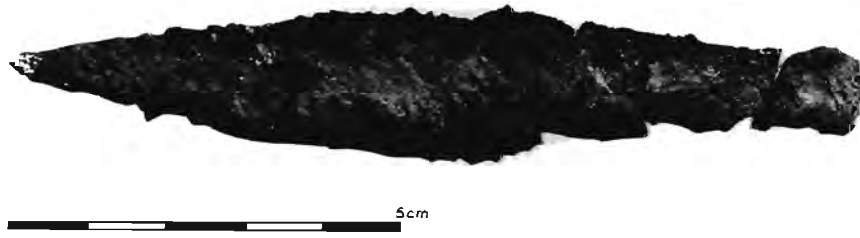


Fig. 20. Iron blade from gully near Pit 21. End of tang is bent double suggesting that the blade was from a small knife.

Stone

Five fragments of typical EIA lower grindstones with elliptical grooves as well as a flake from an EIA upper grindstone were recovered from the pits. These had obviously been discarded along with the other domestic refuse. Four pebbles used as pounders and two grooved pieces of quartzite were found. The latter were probably used for rounding off *Metachatina* beads.

Glass

Two small glass beads, one white and one blue and white striped were recovered from just below the surface of Pit 21 and the gully near Pit 2. Both are

almost certainly of recent origin since this portion of the site was inhabited earlier this century.

Floral remains

Research on the floral remains from Magogo falls into two parts. First, the identification of seeds, recovered from flotation, in order to find out more about the diet, particularly that portion derived from cultivation. Secondly, the identification of charcoal in order to find what woods were used as fuel and also to obtain some idea of the woody vegetation at the time of settlement.

Flotation was carried out using air bubbles but without chemical additives. Care was taken to avoid the upper portion of deposits in order to reduce the chances of contamination. Ashy material was selected from Pits 1, 3, 4 and 5A for this purpose.

Identification of the seeds was carried out by E. J. du Plessis of the Division of Plant and Seed Control, Department of Agriculture. Identified seeds are listed in Table 5 along with comments on their possible uses and provenance. Many attributions are tentative or only to a generic or even broader level because of poor preservation.

For our purposes the most important identifications are those of the two cultivated grains *Eleusine corocana* (finger millet) and *Pennisetum typhoides* (bulrush millet), each from two different pits. Other possible cultigens include the c.f. *Sorghum* sp. which may be a cultivated sorghum and *Citrullus* sp. (melon) which could be wild or cultivated. *Panicum miliaceum* (broomcorn millet) could have been cultivated but is more likely to have been a weed of cultivation.

In addition there is a wide range of indigenous plants varying from grasses and small herbs to shrubs and trees. Many of these have edible parts or traditional medicinal uses. However, as it is not clear how they came to be in the pits, it is not certain that they were deliberately collected; many could have been present through natural causes. This caution is needed since there are also a number of exotic species, essentially weeds, present. Some of these could well be ancient introductions, perhaps along with the original introduction of EIA cultivation, however, others such as *Argemone* sp., *Fumaria officinalis, Opuntia* sp. and c.f. *Populus* are almost certainly of recent introduction (O. M. Hilliard pers. comm.). This implied contamination is not entirely unexpected since biotic activity—rodent burrows, insects, roots etc.—occurs to a considerable depth in the soil of the site, while wind-borne seeds may have been introduced during excavation. It may be significant that whereas quite a number of the cultivated and wild seeds were considered carbonised this was not the case with any of those from the recently introduced species.

Charcoal identifications were carried out by L. O. van Schalkwyk under the supervision of H. J. Deacon and A. Scholtz of the University of Stellenbosch. Charcoal collected from three pits was submitted. It was thought that since Pits 1 and 5 contained essentially domestic debris, their charcoal should reflect the species used for domestic fuel. In the case of Pit 3 which is thought to have been a charcoal pit associated with iron smelting as discussed above, evidence of a

TABLE 5

Seeds identified from flotation samples (identification by E. J. du Plessis).

Identification	Description	Possible use and comments	Provenance
Acacia sp.	Thorn trees	—	Pits 1, 3, 5A
Achyranthes sp.	Weed	some are edible	Pit 3
Adenia sp.	Climbers	roots poisonous, leaves eaten	Pits 1, 4
Argemone sp.	Poisonous weed	exotic	Pits 1, 3, 4
Cadaba sp.	Shrub	—	Pit 3
Celtis sp.	White stinkwood is only local sp.	not eaten, wood has medicinal properties	Pit 1
Citrullus sp.	Melons, both wild and cultivated	*C. lanatus* is an important cultivated melon	Pit 1
Coccinia sp.	Wild cucumbers	leaves, fruit and roots edible	Pit 1
Commelina sp.			
c.f. *Benghalensis*	Herb	leaves edible	Pit 3
Commelina crispa	Herb	—	Pits 1, 3 & 4
Crataegus sp.	Tree	exotic	Pits 1, 4, 5A
Datura sp.	Poisonous weed	exotic	Pits 1, 3, 5A
Eleusine corocana	Finger millet	important grain crop	Pits 3, 4
Euphorbia sp.	Succulent shrubs/trees	poisonous	Pits 1, 3, 4
Fabacea c.f. *vicia*	Weed	exotic	Pit 3
Fumaria officinalis	Weed	exotic	Pit 4
Grewia sp.	Shrubs	many have edible fruits	Pits 1, 3, 4, 5A
Hyptis sp.	Coarse herbs	—	Pit 4
Ipomoea sp.	Convolvulous	some leaves and roots edible; medicinal uses	Pit 4
c.f. *Manihot* sp.	Cassava	exotic	Pit 4
Mollugo sp.	Small herb		Pits 1, 3, 4
Nelsia sp.		not recorded from Natal	Pit 4
Opuntia sp.	Prickly Pear cactus	exotic	Pit 1
Osteospernum calendulaceum	Small herb	? poisonous and medicinal	Pits 1, 3, 4
Osteospernum c.f. *muricatum*	Small herb	? poisonous	Pit 3
c.f. *Panicum miliaceum*	Broomcorn millet	weed of cultivation	Pit 1
Pennisetum typhoides	Bulrush millet	important grain crop	Pits 4, 5A
Poaceae c.f. *Paniceae*	Grasses	—	Pits 1, 3, 4
Polygonaceae	Many herbs	—	Pit 3
c.f. *Populus*	Poplar tree	exotic	Pit 3
c.f. *Proteaceae*	Shrubs/trees	—	Pit 4
c.f. *Sorghum* sp.	? Sorghum	important grain crop	Pit 4
Teucrium sp.	Shrubs	medicinal, some edible	Pits 1, 3, 4
Urochloa sp.	Grasses	typical of disturbed areas	Pits 1, 3, 4
Vitaceae	Climbers	edible fruits	Pit 1

greater degree of selectivity would tend to confirm this function. Van Schalkwyk reports as follows:

Pit 1 Five different species were recognised in analysis:

(i) *Rhus* sp., specifically undetermined

(ii) Two unidentified non-hardwoods, ie. lacking thickened fibres

(iii) *Acacia tortilis*, positive identification

(iv) *Olea* sp., probably *africana* according to Edwards (1967)

Pit 3 Sampling at analysis suggests strongly that only a single species is present

(i) *Olea* sp., probably *africana*. Of the dominant, locally present hardwoods *Olea africana* has the highest wood density and consequently could well have been sought out for the preparation of furnace charcoal.

Pit 5 Five different species were recognised in sample analysis but all remain unidentified. What is noticeable is that not one species has thickened fibres, ie. none of them is a hardwood.

The results from Pit 3 certainly support the hypothesis that the function of this pit was related to iron smelting and not domestic activity. Since *Olea africana*, the wild olive, is a dominant tree in the local Semi-deciduous Bush (Edwards 1967) and other *Olea* species are rare or absent from the area, the charcoal is almost certainly from this species. The possibility that it was favoured for smelting needs to be tested at other EIA sites in this region.

The presence of five different species in each of Pits 1 and 5 suggests that a considerable variety of species including those with relatively soft wood were used for domestic purposes. The species and genera identified are all locally common today, but there is insufficient information to attempt a reconstruction of the local vegetation during the EIA.

Faunal remains

The faunal remains from both Magogo and Mhlopeni are described by E. A. Voigt (1984).

MHLOPENI

This site is 3,5 km from Magogo up the Mhlopeni, a relatively minor but perennial tributary of the Mpofana. Though it is in a much narrower valley, the valley-bottom, stream-side location is similar, as is the patch of relatively flat, deep colluvial soil on which it was built (Fig. 25). Although the site is quite extensive we did much less work here because extensive gully erosion is limited to the north-west corner. In this area we concentrated on a pit, the neighbouring surface scatter and two partly eroded human burials.

The pit was much like the deeper examples from Magogo, being 1,65 m deep and around 1 m in diameter with a flat base. The fill consisted of a mass of pottery and other cultural material in the upper portion—again suggestive of a single dumping episode—with ashy deposits, relatively poor in cultural material in the lower 1 m or so. A charcoal sample from amongst the upper mass of pottery gave the following result: Pta–2878, 1400±50 (A.D. 550) dating it close to Pit 1 at Magogo.

The neighbouring scatter proved to be superficial and of little interest except for the fragments of 2 figurines (Fig. 21).

The burials were poorly preserved and relatively little can be said about the individuals (Appendix 1). The first was a double burial of an adult female and a child of about four years (Fig. 22). The latter was slightly shallower but was almost certainly buried at the same time. It was flexed with heels against the pelvis but knees at 45° to the vertebral column which ran northwards towards the head. It was lying on its left side with a large piece of a broken lower grindstone on top of the torso.

The adult was in much the same position on her left side with legs tightly flexed, pelvis to the south and trunk towards the north. Although only pieces of

Fig. 21. Three fragments of ceramic, human figurines from Mhlopeni.

the skulls were found, they probably would have faced eastwards. Two large lower grindstone fragments, several other stones, some large sherds and half a caprine mandible had been placed on top of the torso (Fig. 22). The sherds came from a large decorated pot, but it was not clear whether they had been buried in a broken state or whether the pot had been complete at burial and broken subsequently by the weight of the overlying stones.

The second burial (Appendix 1) was in even poorer condition, exposed in a shallow gully. The torso extended east–west with the pelvis towards the east, the body facing roughly northwards. A few pieces of cultural material were probably chance associations.

Much of the site has been cultivated in recent years and from the scatter of material it was clearly a large settlement of the same order of size as Magogo.

THE FINDS

Pottery

Most of the pottery was found in Pit 1 from which 15 pots and 5 bowls were sufficiently complete for analysis. Only 1 pot from Burial 1 was large enough to include in the analysis. The pots belong to the Msuluzi phase. However, a third of the everted necks are very much more curved than is usual (Fig. 23:2) and came from the lower part of Pit 1. Neck decoration is typical, as is that on the body, of Msuluzi. The only other pot with a fairly upright neck was undecorated. As at Magogo and other EIA sites some of the pots were 'bottomless' and in one instance (Fig. 24) the break had been partly ground, possibly through use as in Fig. 12:2 from Magogo.

Of the fairly complete bowls recovered from Pit 1 two were Msuluzi bowls with the typical constricture below the subcarination, burnish and bands and panels of decoration (Fig. 23:5). The remaining bowls were undecorated—one was hemispherical, one subspherical and one had a slight carination only 10 mm from the lip.

Other ceramic items

Two small figurine fragments with impressed decoration are probably from human torsos as at Magogo (Fig. 21). A third fragment (Fig. 21: right) is a hand with five fingers and 3 grooves on the arm probably representing bracelets.

Fig. 22. Burial 1 from Mhlopeni. Double burial of adult female with pottery and stones placed on top (top and right), and child of about four years (lower left). NB Caprine mandible in centre of picture.

A ceramic disc with ground edges, dimpled at each side but not drilled through (Fig. 23:6) was recovered from Pit 1.

Shell beads

Only five shell beads were found during the limited excavation—four of *Metachatina* with one of ostrich eggshell from the upper part of Burial 1. The beads were no different from those described above.

CONCLUSION

Early Iron Age villages in the Muden area were clearly largely dependent on their herds and crops. Prior to the drastic environmental degradation so evident today, the area would have been ideally suited to Iron Age subsistence with its areas of rich colluvial soil and its sweetveld grazing.

The report on the faunal remains (Voigt 1984) makes it clear that domestic animals dominated the meat aspect of the diet, with hunting being of relatively minor importance. The report includes the earliest EIA material yet identified from Natal and is therefore of considerable interest. As expected from previous results (Klein 1976, Voigt 1980) cattle and sheep dominate but, for the first time, goats too have been definitely identified. However, at Magogo, the browsing goats seem to have been well outnumbered by the grazing cattle and sheep and

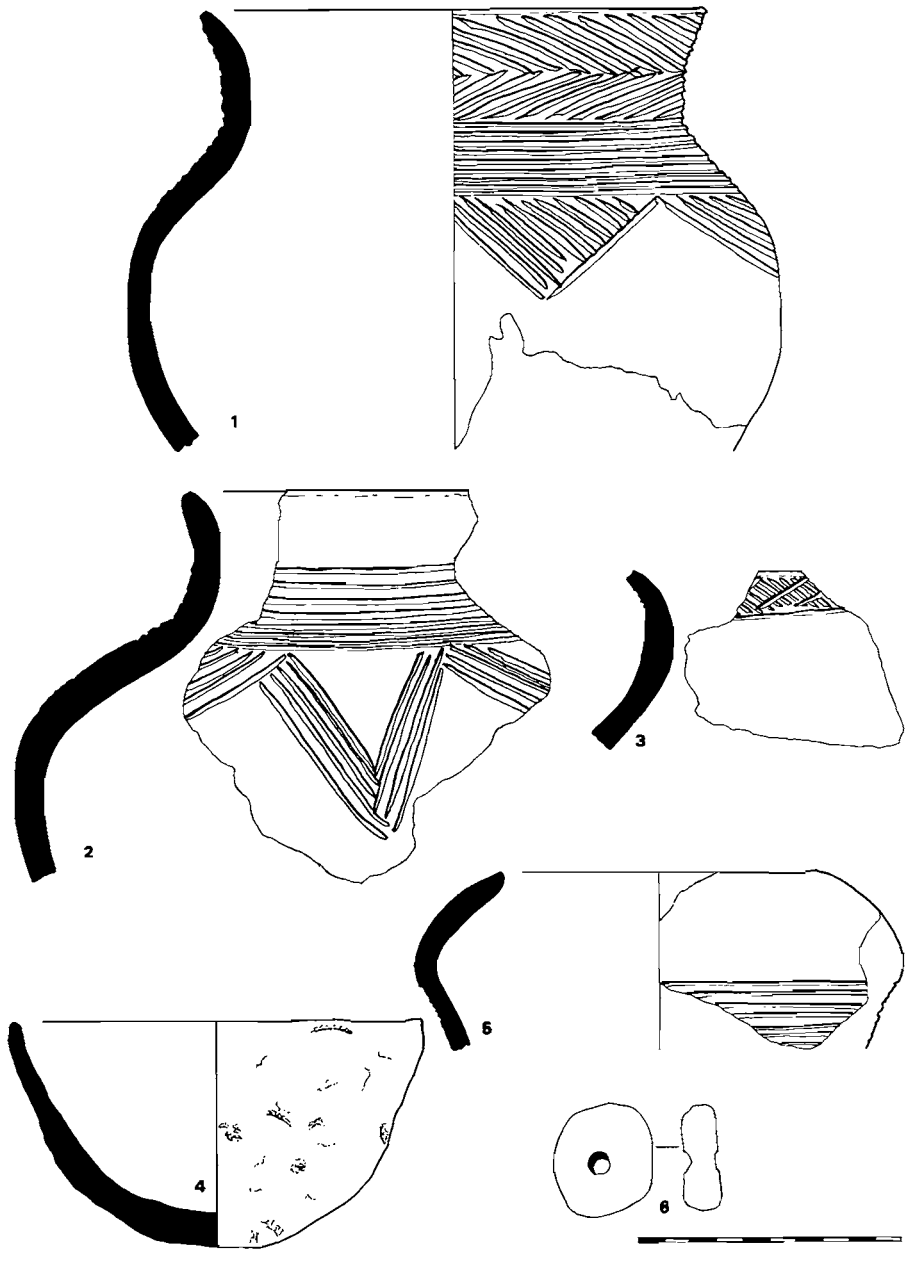


Fig. 23. Pottery and ceramic disc from Pit 1. Mhlopeni. 5 is an Msuluzi bowl.

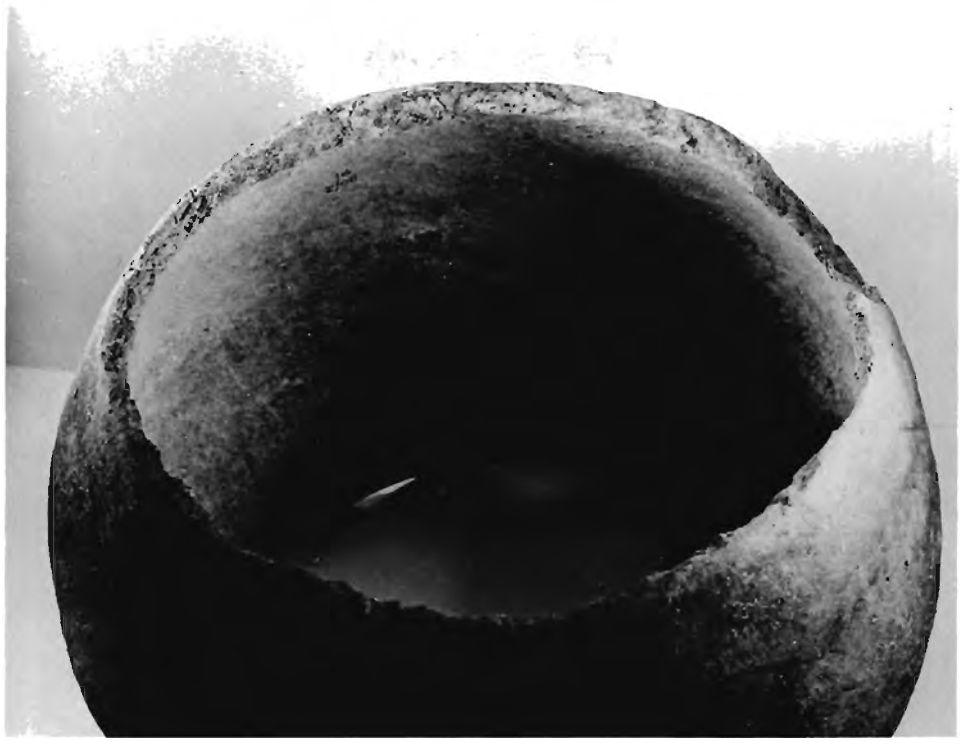


Fig. 24. Pot photographed upside down to show way in which the bottom has been deliberately broken off and the break trimmed neatly and ground in places.

therefore we may reasonably assume that pasture rather than browse was the limiting factor to local EIA herding.

The relatively steep relief of this part of the Tugela Basin provides a variety of environments with varied grazing potential. This is well understood today and no doubt was quickly learnt by the EIA inhabitants. Fig. 25 shows the Semi-deciduous Bush in the dry valley bottoms, fringed by Acacia thornveld (Edwards 1967). These areas and especially the former have year-round good grazing but the grass cover is very sensitive to overgrazing and trampling. Higher up is a fringe of *Themeda–Hyparrhenia* grassland giving way to various higher altitude grassland types with only spring and summer grazing potential.

During the fieldwork K. Mack interviewed ten older Zulu residents of the Mhlopeni Valley, some of whom were the fourth generation of their family in the area. A clear seasonal grazing pattern emerged with a preference for the hilltops in summer—one informant specifically mentioned the tall grass of the *Themeda–Hyparrhenia* grassland—whereas in winter the stalks left over from harvest in the maize fields supplied the main source of fodder. This winter pattern reflects the degraded valley grazing of the present century where the sweetveld grasses have little chance to recover during summer owing to the continual presence of stock. The grass cover has therefore been largely removed leaving an

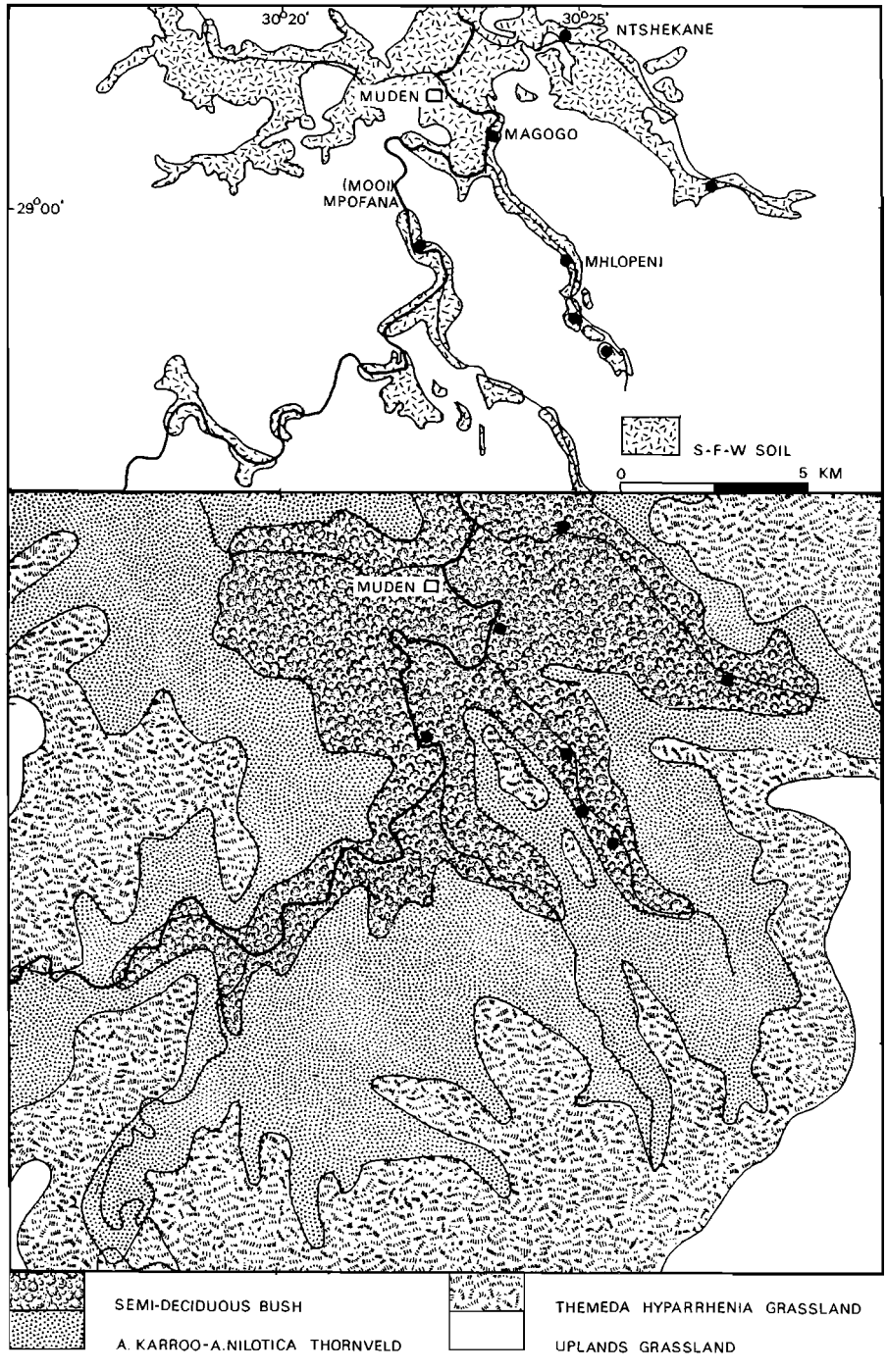


Fig. 25. Distribution of EIA sites in the Muden area in relation to soils (after Van der Eyk *et al* 1969) and vegetation (after Edwards 1967).

unpalatable residue of mainly woody and succulent plants on severely eroded soils.

Several of the informants referred to the Greytown plateau to the south-east with its higher rainfall and relatively sour grazing. If local grazing was poor because of drought, animals would be sent there. This higher rainfall area thus formed a buffer for bad seasons. Informants mentioned both temporary cattle posts and the *ukusisa* system of lending animals out, usually to families with little or no stock of their own. However, it was not clear as to how the transhumance to the Greytown area was managed. It seems that trips both of a few days (one informant mentioned three days) as well as of several months were involved.

The strict valley-bottom location pattern of EIA settlements (Fig. 25), together with the fact that no material of this period has ever been recovered from the Greytown plateau or similar grassland environments, make extrapolation from historic times to this early period difficult. Two things do, however, seem probable. First, that some exploitation of the neighbouring grasslands for grazing would have taken place as EIA herds built up in numbers. Secondly, that some environmental degradation would have taken place in the valleys, particularly in the vicinity of settlements.

In the first instance cattle posts, with their inherently low archaeological visibility, could well have existed in the grasslands, but they will be difficult to find today. In the second instance the clearing of land for cultivation and settlement and the collection of wood for building and fuel would in itself have had some impact on an environment previously exploited only by hunter–gatherers. Probably more serious would have been the grazing pressure of the cattle and sheep kept by these communities, since it seems that goats were not present (at least not in numbers comparable with the other stock). The good quality though relatively sparse grass of the valleys would have been prone to overgrazing so soil erosion may even have started in the vicinity of the larger settlements.

Hunting, as mentioned above, was of relatively minor significance in its contribution to the EIA diet, though a variety of medium and small animals, particularly antelope, was taken (Voigt 1984). Our informants were questioned on hunting in former years and they described occasions when large parties of beaters were used. They mentioned as prey common duiker, blue duiker, bushbuck, rhebok, reedbuck, hares (apparently of two species), wild cat, genet, mongoose, guineafowl and lizards (several species were evidently hunted by the EIA inhabitants as well) (Voigt 1984).

On the subject of cultivation most informants said they would prefer riverside soils but had to make do with hilltop areas as the valleys were no longer available to them. With a mean annual rainfall of 700 mm the valleys are indeed unsuitably dry for maize but are suitable for African cultigens like the grains—*Sorghum*, *Eleusine* and *Pennisetum*—*Vigna* (cowpeas) and *Citrullus* (melon), most of which have been identified from EIA deposits at Magogo or Ndondondwane. The fact that EIA sites are markedly restricted to the deep, alkaline, valley-bottom soils of the Sunvalley–Ferry–Weenen type (Fig. 25) is strongly indicative of the importance of cultivation to their economy. Cultivation would have taken place immediately around and perhaps also within the area of the settlement. The gaps

observed between concentrations of material on these and other sites might indeed allow for gardens within the site itself.

Although we now know some of the crops that were cultivated, we do not have any knowledge of the field system used. However, it seems likely that the traditional Zulu pattern of having an *insimu* (field for grain crops) often some distance from the homestead and a smaller *isife* (vegetable garden) usually closer by, did not apply. For example, our informants mostly had their *insimu* on a hilltop with their *isife* down by the river or close to their homestead. The terminal Iron Age settlement pattern of relatively dispersed homesteads, usually on elevated land, may have contributed to this pattern of cultivated lands. By contrast, the strong correlation between the EIA settlement pattern and the distribution of the best arable land indicates that cultivation took place in the immediate vicinity of settlements at this time.

Another contrast between EIA and later settlement patterns is in the much greater concentration of population in village nodes during the EIA. In Fig. 1 the approximate size of sites is indicated and this shows clearly that most EIA sites are of the order of 8 hectares like both Magogo and Mhlopeni. The area has not been completely explored and therefore there are certainly more sites to be found. However, here as elsewhere, in Natal at least, most sites are large villages of this kind. Exceptions such as the little site south-west of Magogo on the Mpofana (Fig. 1), which seems to represent only two smelting areas, are relatively rare.

Each settlement was surrounded by a large area of varying topography which was presumably used as commonage for grazing, hunting and the collection of a wide range of natural resources for food, fuel, building etc. The Semi-deciduous Bush was probably quite dense thicket in places at the onset of the EIA. Pioneering settlements would have had to clear extensive patches for dwellings and fields and they may also have opened up larger tracts of bushveld around the settlements by burning to reduce the woody vegetation and encourage more grass for the flocks and herds.

Any attempt to determine the extents of such commonage would have to take into careful consideration the question of contemporaneity of sites. For example Mhlopeni and the earlier occupation of Magogo could well be contemporary and, with a distance of 3,5 km between them, each would have had an extensive commonage. However, they could equally well have been occupied sequentially. In the case of the later Magogo occupation it is the only one of its type yet known from the Muden area as is the still later Ntshekane site dated to the ninth century. Since all of the sites on Fig. 1 have yielded some Msuluzi-type pottery it is tempting to suggest that the sixth and seventh centuries saw a denser population than the eighth and ninth, a pattern that is in accord with ceramic evidence from other parts of Natal as well.

The evidence for two and possibly three occupations at both Magogo and Ntshekane can be taken as a cautionary tale for southern African EIA studies in general. Such reoccupation of preferred site locations must now be regarded as a likelihood. Both sites and assemblages need to be examined with this in mind rather than the acceptance of the often implicit assumption of a single occupation. Several key EIA sites have in recent years been treated as single occupations for

purposes of ceramic analysis even where the radiocarbon dates have indicated too long a time span for this to be likely. This is true of Broederstroom (Mason 1981), Klein Afrika (Prinsloo 1981) and Klingbeil (Evers 1980) all of which are in effect type sites as well as being important to current views on Iron Age dispersal patterns. The same can be said of Ntshekane which we treated as a single assemblage even though we strongly suspected multiple occupations (Maggs & Michael 1976). Further research at other EIA sites has confirmed our suspicions, while a multidimensional scaling programme applied to the ceramic analysis neatly separated out the Msuluzi phase attributes from those of the typical Ntshekane material (Butler-Adams & Sutcliffe unpublished report). We can now say that while most of the features belong to the Ntshekane phase, two are of the Msuluzi phase (B and near B1) while another two (N & W) produced pottery similar to Ndondondwane and the related material from Magogo. At Ntshekane the typological differences were sufficient to serve as a warning without any further evidence. This was not so much the case at Magogo where all the pottery could well have been considered as belonging to the same phase if information on the ceramic sequence from other sites had been less developed.

Human skeletal remains from Mhlopeni as well as the previously described site of Msuluzi Confluence (Maggs 1980) which is closely contemporary, are described by H. de Villiers in Appendix 1. There is no conclusive evidence on the physical type of the EIA villagers because of the poor condition of the material. However, in terms of size and robustness the remains suggest the presence of Negro rather than Khoisan people.

ACKNOWLEDGEMENTS

Thanks are due to the Hermannsburg Mission; the Mhlopeni Game Ranch and G. Goody for permission to camp and excavate on their ground; to those who helped in the field including J. Argyle, S. Christie, C. Hooper, A. Konigkramer, L. Kvalsvig, V. Maggs, the MacDonald family, L. Norman, C. Pretorius, P. Smyth, J. Pons and 7 Kearsney scholars, L. Schweitzer, G. Wiseman, J. Wright; to K. Mack for historical information and, with T. Mthethwa for help in preparing this report; to R. Kilburn for shell identification; to E. J. du Plessis, H. de Villiers, O. Hilliard and E. A. Voigt for identification of remains; to J. C. Vogel for radiocarbon dates and the Human Sciences Research Council and Natal Museum for funding the research.

REFERENCES

EDWARDS, D. 1967. *A plant ecological survey of the Tugela River Basin.* Pietermaritzburg: Natal Town and Regional Planning Report; v. **10** (Botanical Survey of South Africa memoir; no. 36).

EVERS, T. M. 1980. Klingbeil Early Iron Age sites, Lydenburg, Eastern Transvaal, South Africa. *S. Afr. archaeol. Bull.* **35**: 46–57.

KLEIN, R. 1976. *In:* Maggs, T & Michael, M. Ntshekane: an Early Iron Age site in the Tugela Basin, Natal. *Ann. Natal Mus.* **22** (3): 731, 735.

MAGGS, T. 1980. Msuluzi Confluence: a seventh century Early Iron Age site on the Tugela River. *Ann. Natal. Mus.* **24** (1): 111–146.

——— 1982. Mabhija: pre-colonial industrial development in the Tugela Basin. *Ann. Natal Mus.* **25** (1): 123–141.

——— 1984. Ndondondwane: a preliminary report on an Early Iron Age site on the Lower Tugela River. *Ann. Natal Mus.* **26** (1): 71–93.

——— in press. Iron Age settlement and subsistence patterns in the Tugela Basin. *In:* Proceedings South African Archaeological Association Conference. Gaberone, 1983. B.A.R.

MAGGS, T. & MICHAEL, M. 1976. Ntshekane: an Early Iron Age site in the Tugela Basin, Natal. *Ann. Natal Mus.* **22** (3): 705–740.

MASON, R. J. 1981. Early Iron Age settlement at Broederstroom 24/73, Transvaal, South Africa. *S. Afr. J. Sci.* **77** (9), 401–416.

PRINSLOO, H. P. 1981. *The Early Iron Age site at Klein Afrika.* Unpublished conference paper. Southern African Association of Archaeologists, Pretoria. July 1981.

VAN DER EYK, J. J., MACVICAR, C. N., & DE VILLIERS, J. M. 1969 *Soils of the Tugela Basin.* Pietermaritzburg: Natal Town and Regional Planning Report; v. 15.

VOIGT, E. A. 1980. The faunal sample from Msuluzi Confluence. Appendix *In:* Maggs, T., Msuluzi Confluence: a seventh century Early Iron Age site on the Tugela River. *Ann. Natal Mus.* **24** (1): 140–145.

——— 1984. The faunal remains from Magogo and Mhlopeni: small stock herding in the Early Iron Age of Natal. *Ann. Natal Mus.* **26** (1): 141–163.

VON SCHIRNDING, Y., VAN DER MERWE, N. J. & VOGEL, J. C. 1982. Influence of diet and age on carbon isotope ratios in ostrich eggshell. *Archaeometry.* **24** (1): 3–20.

Date received: 25 January 1984.

APPENDIX

EARLY IRON AGE HUMAN SKELETAL REMAINS FROM MHLOPENI AND MSULUZI CONFLUENCE

H. de Villiers

(Department of General Anatomy,
University of the Witwatersrand)

Description of skeletal remains

The estimation of age at the time of death is based on (i) epiphyseal union, (ii) bony changes in the pubic symphysis, (iii) eruption sequence of deciduous and permanent teeth and (iv) molar wear. The present estimates are based on standards derived from Caucasoid populations since, as far as is known, such data are not available for southern African populations.

The assessment of the sex of the individuals represented is based on (i) cranial and mandibular features, (ii) humeral and femoral head diameters, (iii) morphological features of the os coxae.

The estimation of stature in the adult is based on Lundy's regression formulae for modern South African Negro populations.

The platymeric and platycemic indices have also been calculated, these indices reflect flattening of the femoral and tibial shafts respectively. It has been demonstrated that flattening of the femoral and or tibial shafts results from nutritional deficiencies which affect the structure of the bones and so influence the osseous resistance to the stresses of locomotion.

Mhlopeni Burial 1 (Upper)

The skeletal remains comprise:

Axial skeleton:

Vertebrae 11 complete, 7 arches, 10 bodies and 15 fragments; ribs 16 and 28 fragments; manubrium and 3 sternebrae.

Appendicular skeleton:

Clavicle (right), scapula (right, left incomplete), humerus (right, distal extremity missing), left, radius fragmented, os coxae ilium, ischium, pubis (right and left), sacrum 4 fragments and one coccygeal piece, femur (right and left), tibia (right, left distal extremity missing), fibula (right, left distal extremity missing, also fractured), carpal bones 6, tarsal bones talus, calcaneus, and 3, metacarpal/tarsal 16, phalanges 25.

Cranium:

Fragments of parietal bones—right and left showing premature closing of the sagittal suture; frontal and occipital fragments, also fragments of cranial base and facial skeleton, the latter including a small fragment of the maxilla containing the second deciduous molar.

Mandible:

Left corpus mandibulae containing deciduous second molar and crowns of the permanent first molar and premolar. Right, two fragments of ramus.

Isolated teeth:

Deciduous—lower first molar, 2 canines and root fragments; permanent—crowns of canine and first molar.

Also included are fragments of burnt bone which appear to have been animal in origin—as well as fragments of unburnt animal bone including vertebrae, jaw fragments, isolated teeth.

The remains are those of an infant, probably not more than 4 years of age at the time of death. The pelvic bones suggest a female and the large permanent tooth crowns a Negroid rather than a Khoisanoid infant. The fragmentary state of the cranium and mandible, however, make this assessment of population affinity somewhat conjectural.

Mhlopeni Burial 1 (Lower)

The skeletal remains consist of:

Axial skeleton:

Sternum (manubrium missing), ribs (12 fragments)

Appendicular skeleton:

Humerus right (upper extremity missing), radius and ulna (right and left), carpal bones 11, metacarpal bones 10, phalanges 10, os coxae—pubic bone (right and left) with parturition scar; ilium fragmentary blade (right) and fragments of left blade, acetabulum and ischium, femur (right) (complete) with osteophyte on lesser trochanter, (left) head and neck fragmented, tibia and fibula (right and left), patella (right and left) with small exostoses, calcaneus (right) and navicular, talus (right and left) 2 cuboids and 2 cuneiform bones, metatarsal bones 5, phalanges 5.

The individual represented by these remains was fully adult at the time of death. The pelvic bones and parturition scar are indicative of a female. The estimated age at death, based on changes of the pubic symphysis is 47,7 years and the maximum living stature 153,6 cm. It is not possible to comment on the population group of this individual.

Table 1 presents the measurements of the complete long bones, indices and non-metrical features. The platymeric index (100FeD1/FeD2 84,2%) shows that there is flattening of the femur and the platycnemic index (100 TiD2/Tid1 68,1%) likewise that there is slight flattening of the tibia. Flattening of these long bone shafts suggests that the individual may have been suffering from undernutrition during her growth period.

Mhlopeni Burial 2

A very fragmentary post cranial skeleton consisting of: fragments of vertebrae, both bodies and arches; as well as almost complete axis and the upper segment of the sacrum; fragments of ribs, fragments of the right scapula and left clavicle; fragments of humerus, shaft and left distal fragment; fragments of radius, right and left distal extremities and right proximal fragment; ulna, right and left distal fragments; ilium right fragmented blade, the acetabulum of the left os coxae; the head of the left femur together with the greater trochanter; calcaneus right, talus; carpal bones 12, metacarpal/tarsal bones 7, phalanges 12; mandible, right condyle.

The individual represented by these remains was fully adult at the time of death, the large size of the preserved portions of the skeleton suggest a male, however the fragmentary nature of this skeleton makes it impossible to state with any accuracy the sex, age and population group of this individual.

Msuluzi Confluence Burial '30'

A very fragmentary skeleton consisting of the following: Vertebrae fragmented; ribs 28 fragments, manubrium and sternum fragments, humerus shaft and right distal extremity, radius right and left head, ulna right and left proximal extremities and upper third of shaft, femur right shaft and upper portion of left shaft as well as fragments of the proximal and distal extremities, patella right, os coxae fragments of the ilia, numerous bone fragments which are not readily identifiable.

The remains are those of an adult, the size of the bones and the pronounced muscular markings suggest a male. The age at death was probably between 25–35 years—this assessment is based on the wear of the two molar teeth, which show uneven wear with dentine exposure. The large size of these two teeth further indicate that the individual was probably Negro.

Appendix Table 1
Burial 1—lower
Measurements: Indices & non-metric variation of postcranial skeleton

Long bones	*Humerus*		right incomplete	
	Supra condyloid process		absent	
	Septal aperture		absent	
	Radius	Ral_1	25,1	
	Ulna	UiL_1	26,8	
	Femur	FeL_1	41,4	
		FeD_1	23,5	
		FeD_2	27,9	
		100 FeD_1/FeD_2	84,2	Platymeric
		FeD_3	26,1	
		FeD_4	24,6	
		100 FeD_3/FeD_4	106,1	
			slight	
		FeD_5	39,2	
	Allen's Fossa		absent	
	Poirier's Foot		absent	
	Plaque		absent	
	Hyopotrochanteric fossa		absent	
	Exostosis Trochanteric fossa		absent	
	Tibia	TiL_1	35,2 cm	
		TiD_1	32,6	
		TiD_2	22,2	
		Lateral squatting facet	absent	
		Medial squatting facet	absent	
		100 TiD_2/TiD_1	68,1	Mesocnemic
		FiL_1	33,4	
Patella	Vastus notch		absent	
	Vastus fossa		absent	
	Emarginate patella		absent	
Talus	Inf. Talar Art. Surface		single	
Calcaneus	Ant. Calcaneal Facet		double	
	Peroneal tubercle		? ?	

Msuluzi Confluence Burial 'D6'

The skeletal remains comprise:

Postcranial skeleton:

Vertebrae 7 arches, 18 lateral pieces or fragments thereof, 4 bodies or parts of bodies; scapula (right); clavicle (right, fractured and incomplete); humerus, radius, ulna, femur shafts (fractured and fragmented); ilium fragments; metacarpal/tarsal bones 3.

Cranium:

Fragments of cranial vault bones (15); temporal bones (right mastoid, petrous and part of tympanic plate; left portion of petrous part); occipital bone (basi and right condylar parts).

Teeth:

Crowns of permanent teeth: Incisors (upper central and 2 lateral) (lower central), canine, molars (first and second).

The remains are those of an infant of approximately two years of age at the time of death (this assessment is based on the state of development of the crowns of the permanent teeth and the state of ossification of the cranial bones). It is not possible to assess the population group with any degree of accuracy but the large crowns of the permanent teeth are indicative of a Negro.

It is not possible to comment on the sex of the individual represented.